FIG.1

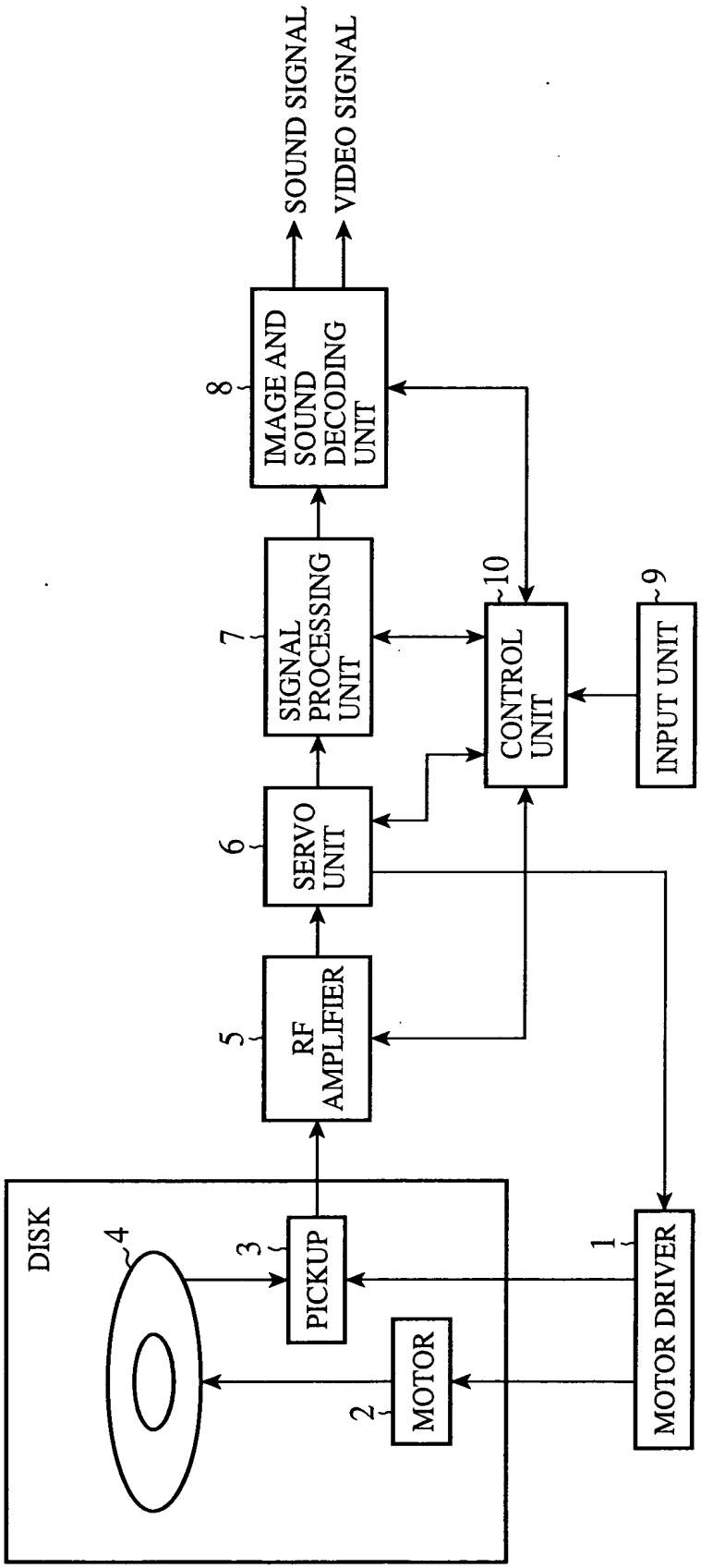

DISK
4
3
PICKUP
2
MOTOR
1
MOTOR DRIVER
5
RF AMPLIFIER
6
SERVO UNIT
7
SIGNAL PROCESSING UNIT
8
IMAGE AND SOUND DECODING UNIT
SOUND SIGNAL
VIDEO SIGNAL
10
CONTROL UNIT
9
INPUT UNIT

FIG.2

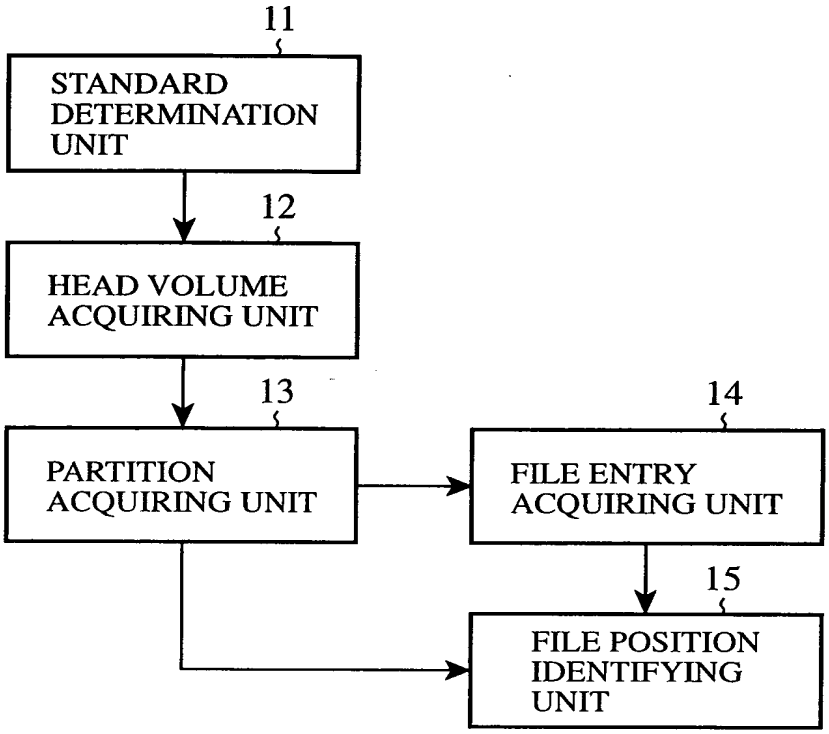

11
STANDARD DETERMINATION UNIT
12
HEAD VOLUME ACQUIRING UNIT
13
PARTITION ACQUIRING UNIT
14
FILE ENTRY ACQUIRING UNIT
15
FILE POSITION IDENTIFYING UNIT

FIG.5

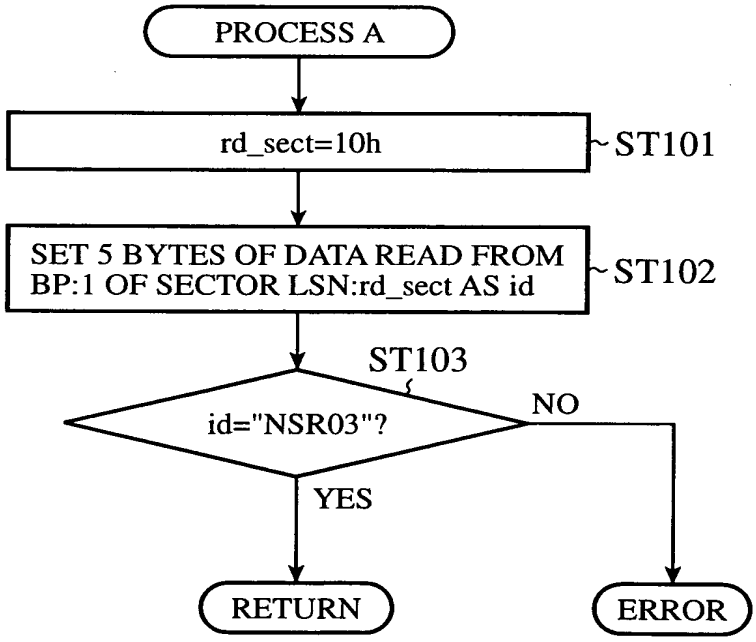

PROCESS A
rd_sect=10h
ST101
SET 5 BYTES OF DATA READ FROM BP:1 OF SECTOR LSN:rd_sect AS id
ST102
ST103
id="NSR03"?
NO
YES
RETURN
ERROR

FIG.3

LSN hex	LBN hex	ORDER OF REPRODUCTION	AREA NAME	ACQUIRED DATA	REMARKS
10		1	Beginning Extended Area Descriptor		
11		2	NSR Descriptor	"NSR03"	ONLY FOR CHECKING
20		4	Primary Volume Descriptor		
22		5	Partition Descriptor	Partition Starting Location	
23		6	Logical Volume Descriptor	First File Set Descriptor Position Location of Sparing Table	
100		3	Anchor Volume Descriptor	Volume Descriptor Sequence Extent	
2180	0				Logical Volume Space Start
2210	90	7	First File Set Descriptor	Root Directory Files Entry Position	
2220	A0	8	Root Directory Files Entry	File Identifier Descriptor Position (ICB)	
2221	A1	9	File Identifier Descriptor	"DVD_RTAV"File Entry Position (ICB)	
2225	A5	10	"DVD_RTAV"Files Entry	"DVD_RTAV"Derectory Position	
2226	A6	11	"VR_MANGAR.IFO","VR_MOVIE.VRO" File Identifier Descriptor	"VR_MANGAR.IFO"File Entry Position (ICB)	
2228	A8	12	"VR_MANGAR.IFO"File Entry	"VR_MANGAR.IFO"File Position (ICB)	
2229	A9	14	"VR_MANGAR.IFO"File		
222B	AB	13	"VR_MOVIE.VRO"File Entry	"VR_MOVIE.VRO"File Position (ICB)	
2780 3352	600 11D2	15	} "VR_MOVIE.VRO"File		Real Time Extent RT1 Real Time Extent RT2

PARTITION

Logical Block Address

FIG.4

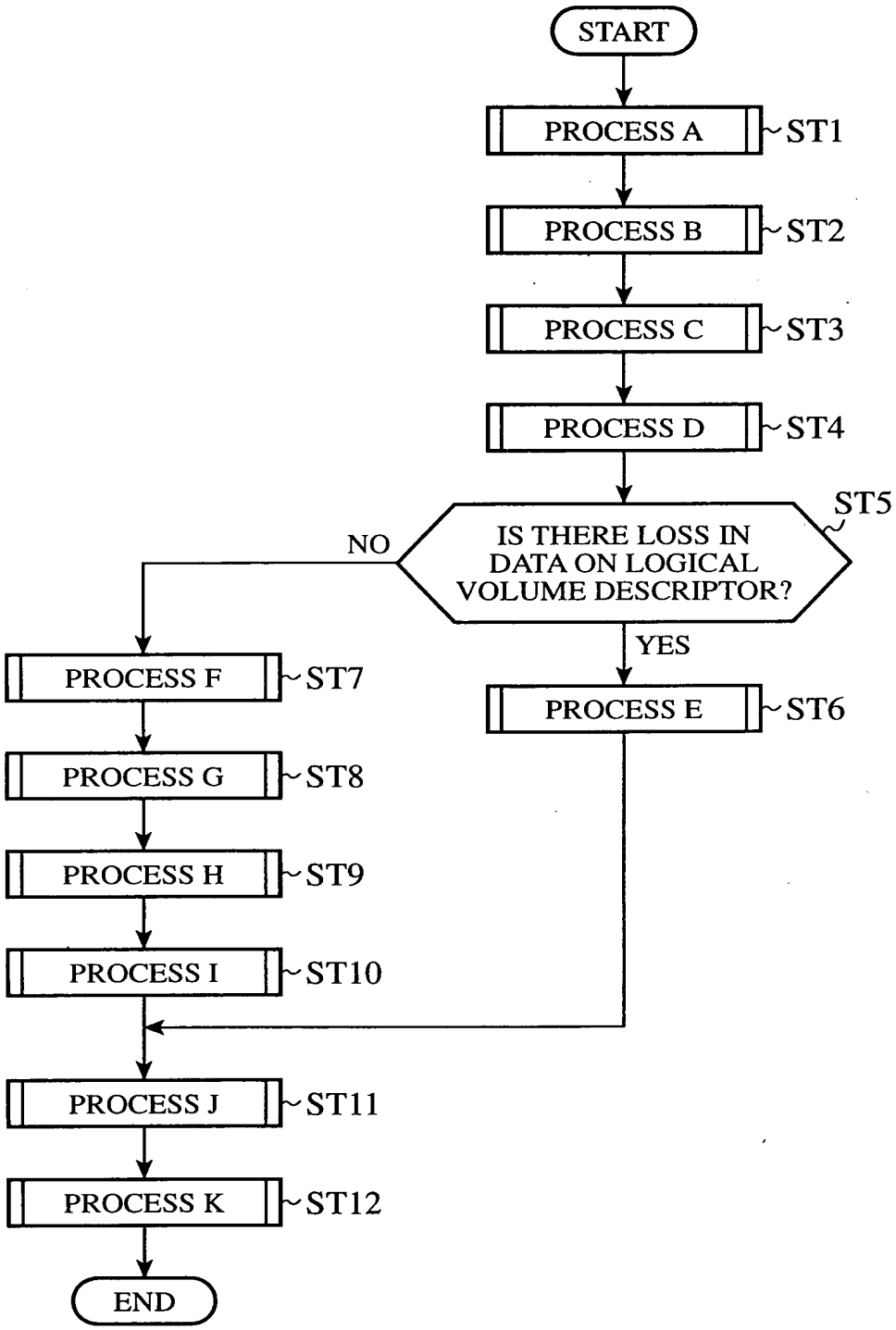

START
PROCESS A
ST1
PROCESS B
ST2
PROCESS C
ST3
PROCESS D
ST4
ST5
IS THERE LOSS IN DATA ON LOGICAL VOLUME DESCRIPTOR?
NO
YES
PROCESS F
ST7
PROCESS E
ST6
PROCESS G
ST8
PROCESS H
ST9
PROCESS I
ST10
PROCESS J
ST11
PROCESS K
ST12
END

FIG.6

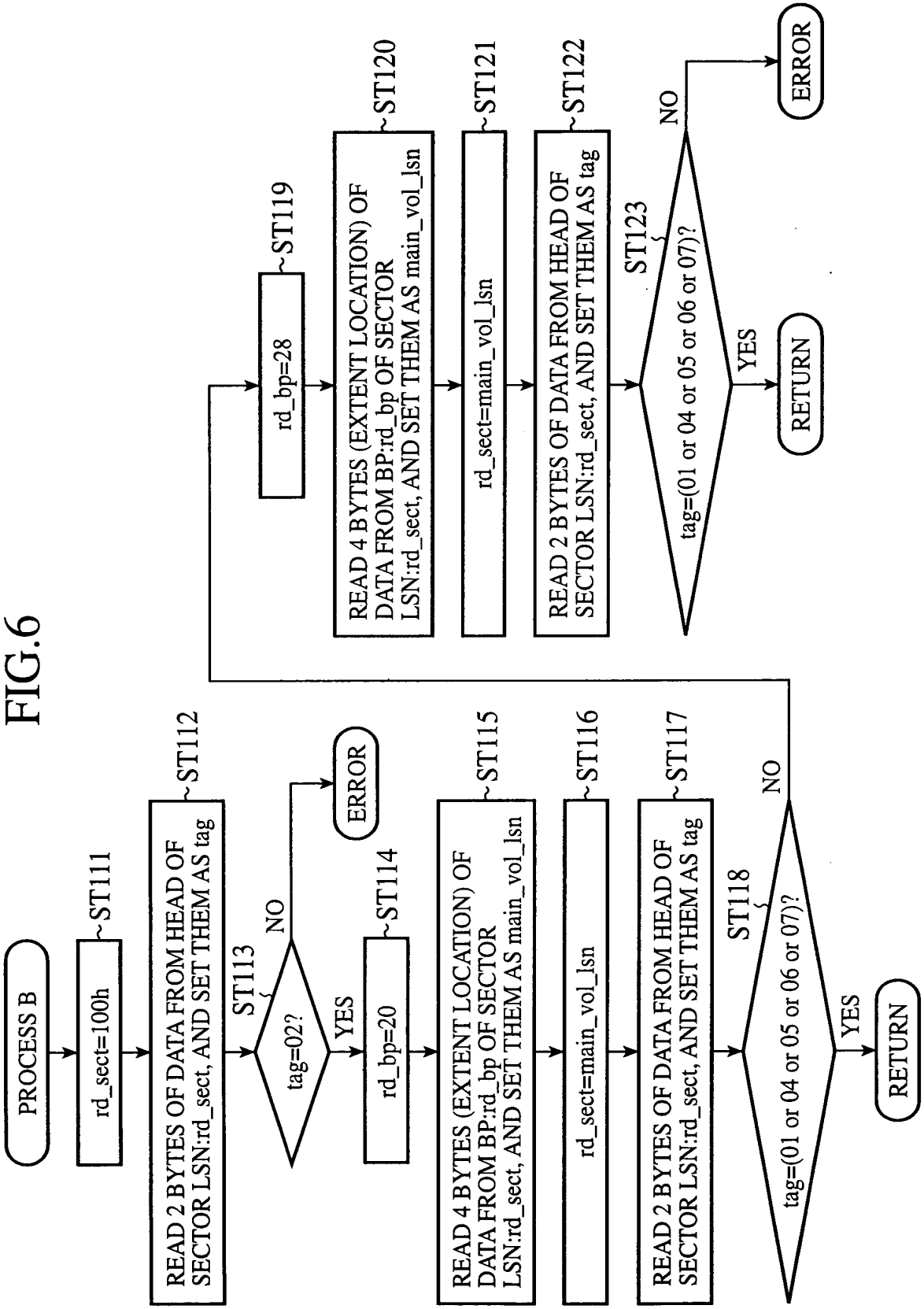

PROCESS B
rd_sect=100h
ST111
READ 2 BYTES OF DATA FROM HEAD OF SECTOR LSN:rd_sect, AND SET THEM AS tag
ST112
tag=02?
ST113
NO
ERROR
YES
rd_bp=20
ST114
READ 4 BYTES OF DATA FROM BP:rd_bp OF SECTOR LSN:rd_sect, AND SET THEM AS main_vol_lsn
ST115
rd_sect=main_vol_lsn
ST116
READ 2 BYTES OF DATA FROM HEAD OF SECTOR LSN:rd_sect, AND SET THEM AS tag
ST117
tag=(01 or 04 or 05 or 06 or 07)?
ST118
NO
YES
RETURN
rd_bp=28
ST119
READ 4 BYTES (EXTENT LOCATION) OF DATA FROM BP:rd_bp OF SECTOR LSN:rd_sect, AND SET THEM AS main_vol_lsn
ST120
rd_sect=main_vol_lsn
ST121
READ 2 BYTES OF DATA FROM HEAD OF SECTOR LSN:rd_sect, AND SET THEM AS tag
ST122
tag=(01 or 04 or 05 or 06 or 07)?
ST123
NO
YES
RETURN
ERROR

FIG.7

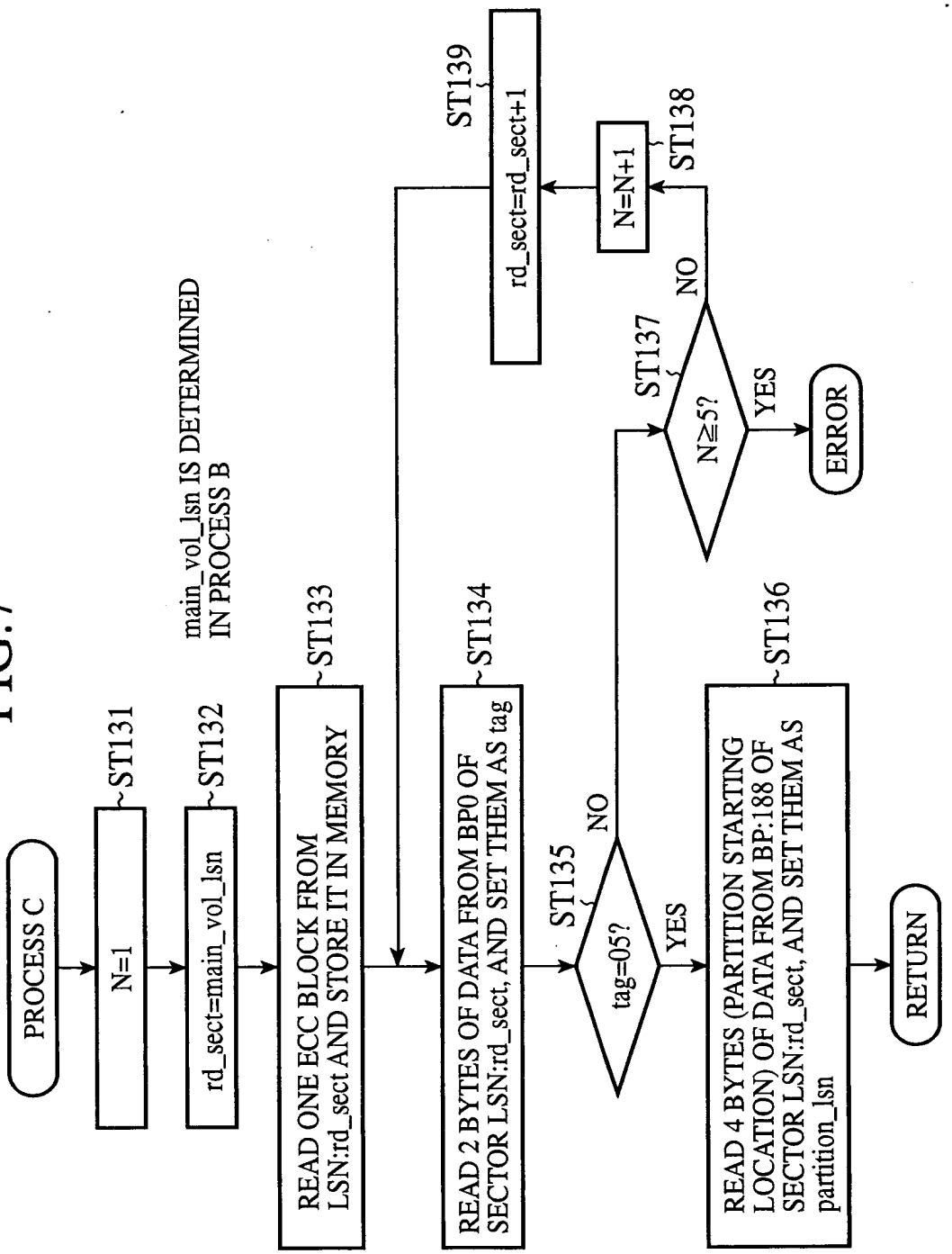

PROCESS C
N=1
ST131
rd_sect=main_vol_lsn
ST132
main_vol_lsn IS DETERMINED IN PROCESS B
READ ONE ECC BLOCK FROM LSN:rd_sect AND STORE IT IN MEMORY
ST133
READ 2 BYTES OF DATA FROM BP0 OF SECTOR LSN:rd_sect, AND SET THEM AS tag
ST134
tag=05?
ST135
NO
YES
READ 4 BYTES (PARTITION STARTING LOCATION) OF DATA FROM BP:188 OF SECTOR LSN:rd_sect, AND SET THEM AS partition_lsn
ST136
RETURN
N≧5?
ST137
NO
YES
ERROR
N=N+1
ST138
rd_sect=rd_sect+1
ST139

FIG.8

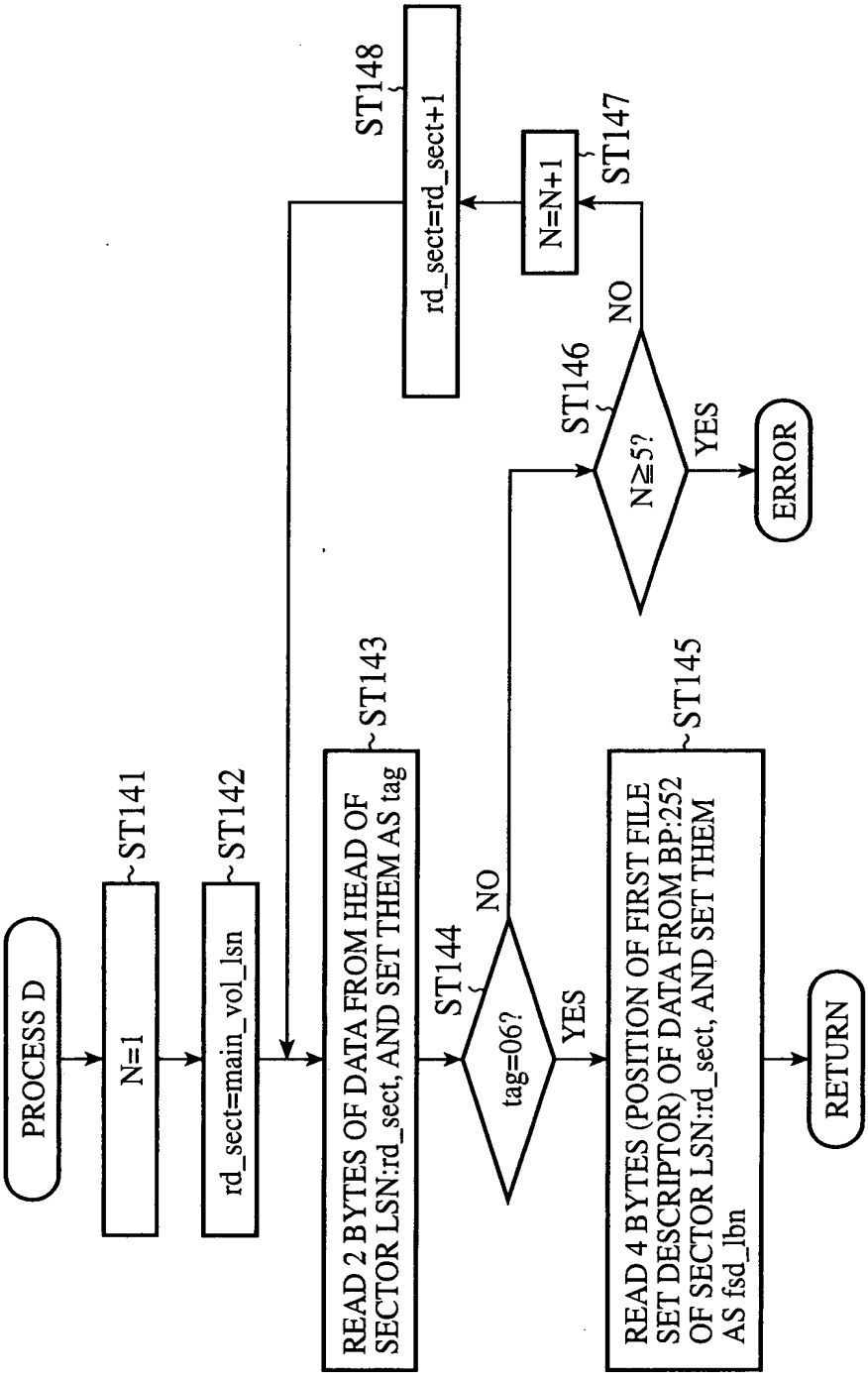

PROCESS D
N=1
ST141
rd_sect=main_vol_lsn
ST142
READ 2 BYTES OF DATA FROM HEAD OF SECTOR LSN:rd_sect, AND SET THEM AS tag
ST143
tag=06?
ST144
NO
YES
READ 4 BYTES (POSITION OF FIRST FILE SET DESCRIPTOR) OF DATA FROM BP:252 OF SECTOR LSN:rd_sect, AND SET THEM AS fsd_lbn
ST145
RETURN
N≧5?
ST146
NO
YES
ERROR
N=N+1
ST147
rd_sect=rd_sect+1
ST148

FIG.9

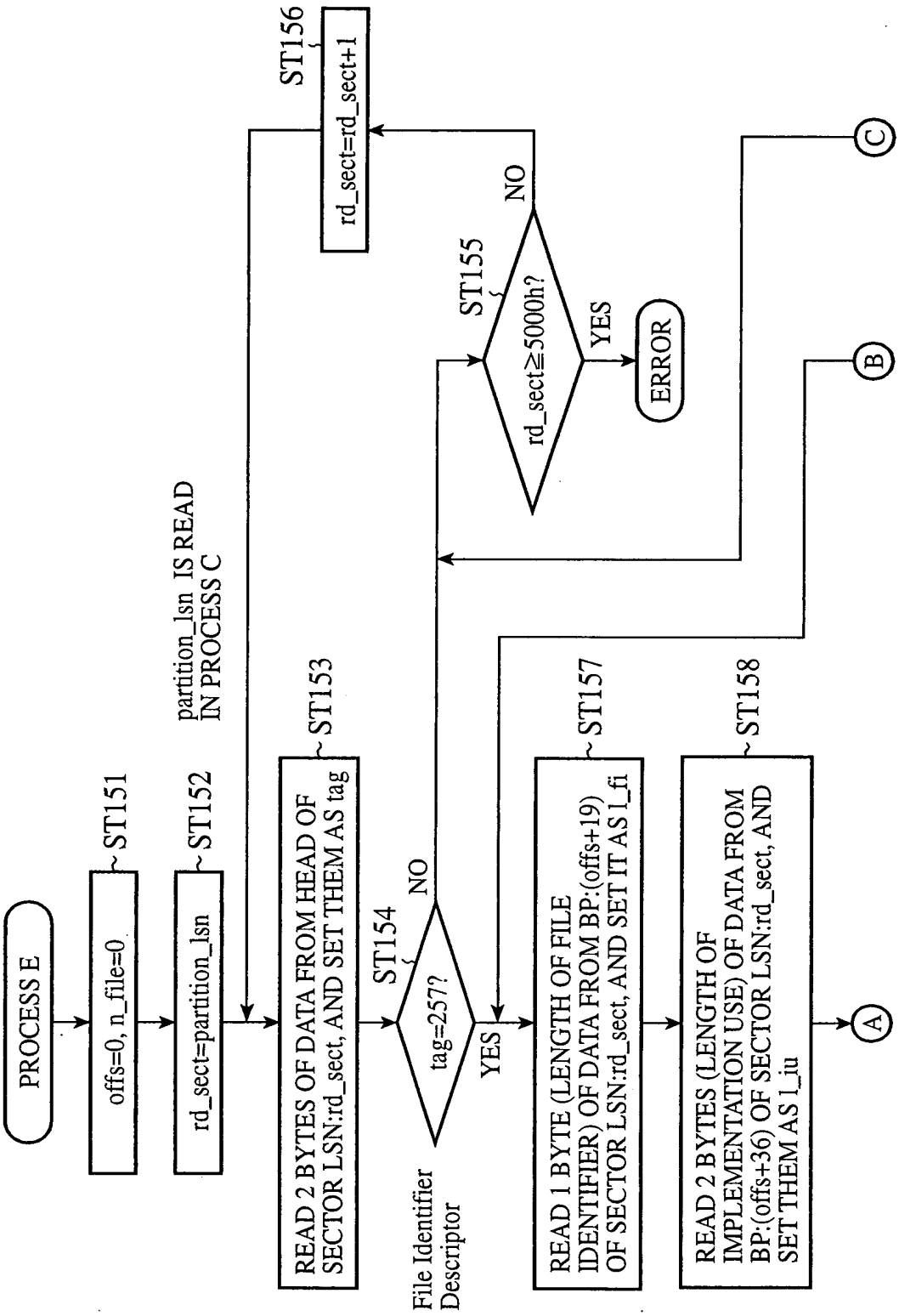

PROCESS E
offs=0, n_file=0
ST151
rd_sect=partition_lsn
ST152
partition_lsn IS READ IN PROCESS C
READ 2 BYTES OF DATA FROM HEAD OF SECTOR LSN:rd_sect, AND SET THEM AS tag
ST153
tag=257?
ST154
NO
YES
File Identifier Descriptor
rd_sect≧5000h?
ST155
NO
YES
ERROR
rd_sect=rd_sect+1
ST156
READ 1 BYTE (LENGTH OF FILE IDENTIFIER) OF DATA FROM BP:(offs+19) OF SECTOR LSN:rd_sect, AND SET IT AS l_fi
ST157
READ 2 BYTES (LENGTH OF IMPLEMENTATION USE) OF DATA FROM BP:(offs+36) OF SECTOR LSN:rd_sect, AND SET THEM AS l_iu
ST158
A
B
C

FIG.10

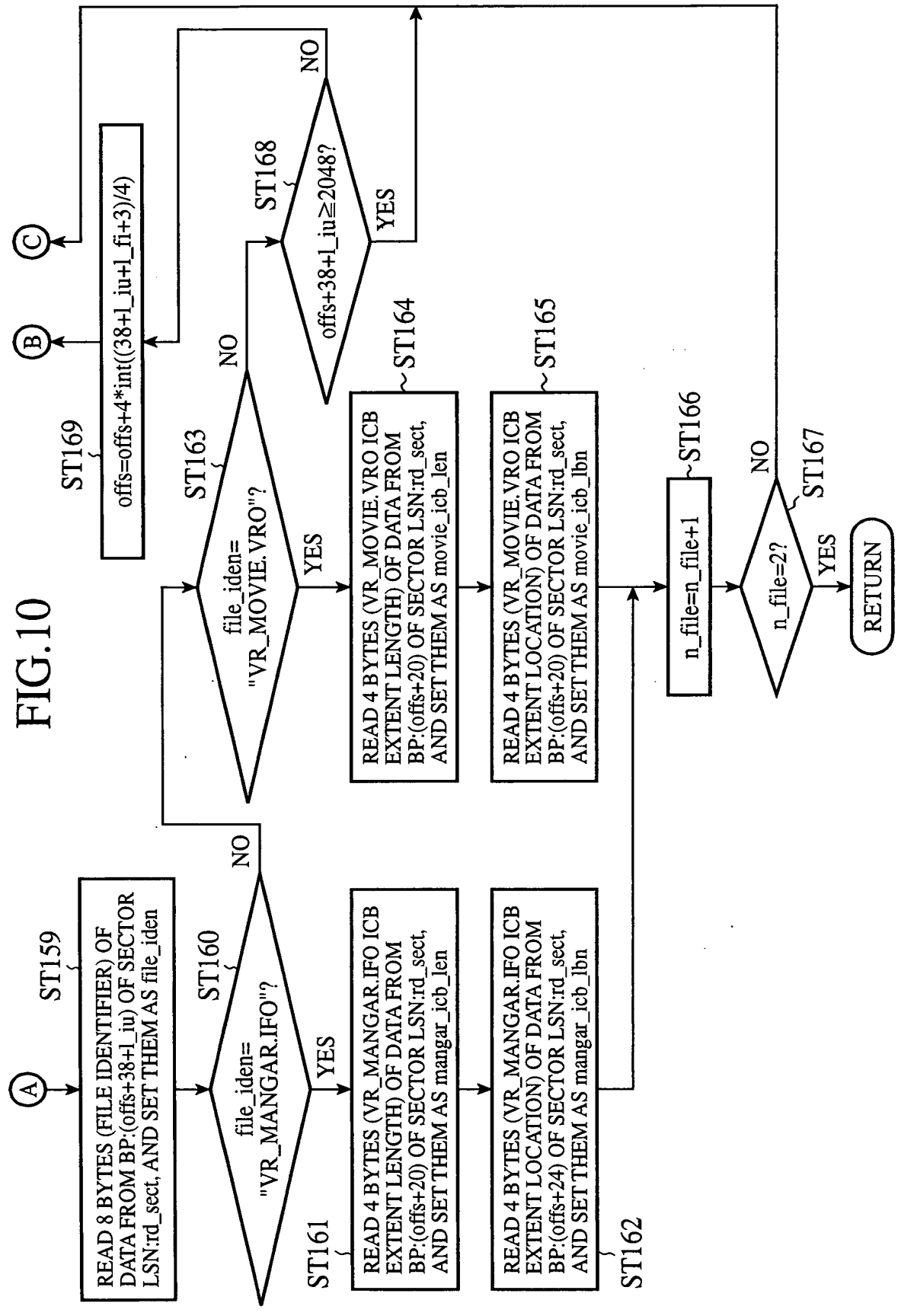

A
ST159
READ 8 BYTES (FILE IDENTIFIER) OF DATA FROM BP:(offs+38+l_iu) OF SECTOR LSN:rd_sect, AND SET THEM AS file_iden
ST160
file_iden= "VR_MANGAR.IFO"?
NO
YES
ST161
READ 4 BYTES (VR_MANGAR.IFO ICB EXTENT LENGTH) OF DATA FROM BP:(offs+20) OF SECTOR LSN:rd_sect, AND SET THEM AS mangar_icb_len
READ 4 BYTES (VR_MANGAR.IFO ICB EXTENT LOCATION) OF DATA FROM BP:(offs+24) OF SECTOR LSN:rd_sect, AND SET THEM AS mangar_icb_lbn
ST162
ST163
file_iden= "VR_MOVIE.VRO"?
NO
YES
ST164
READ 4 BYTES (VR_MOVIE.VRO ICB EXTENT LENGTH) OF DATA FROM BP:(offs+20) OF SECTOR LSN:rd_sect, AND SET THEM AS movie_icb_len
ST165
READ 4 BYTES (VR_MOVIE.VRO ICB EXTENT LOCATION) OF DATA FROM BP:(offs+20) OF SECTOR LSN:rd_sect, AND SET THEM AS movie_icb_lbn
ST166
n_file=n_file+1
ST167
n_file=2?
NO
YES
RETURN
ST168
offs+38+l_iu≧2048?
NO
YES
B
C
ST169
offs=offs+4*int((38+l_iu+l_fi+3)/4)

FIG.11

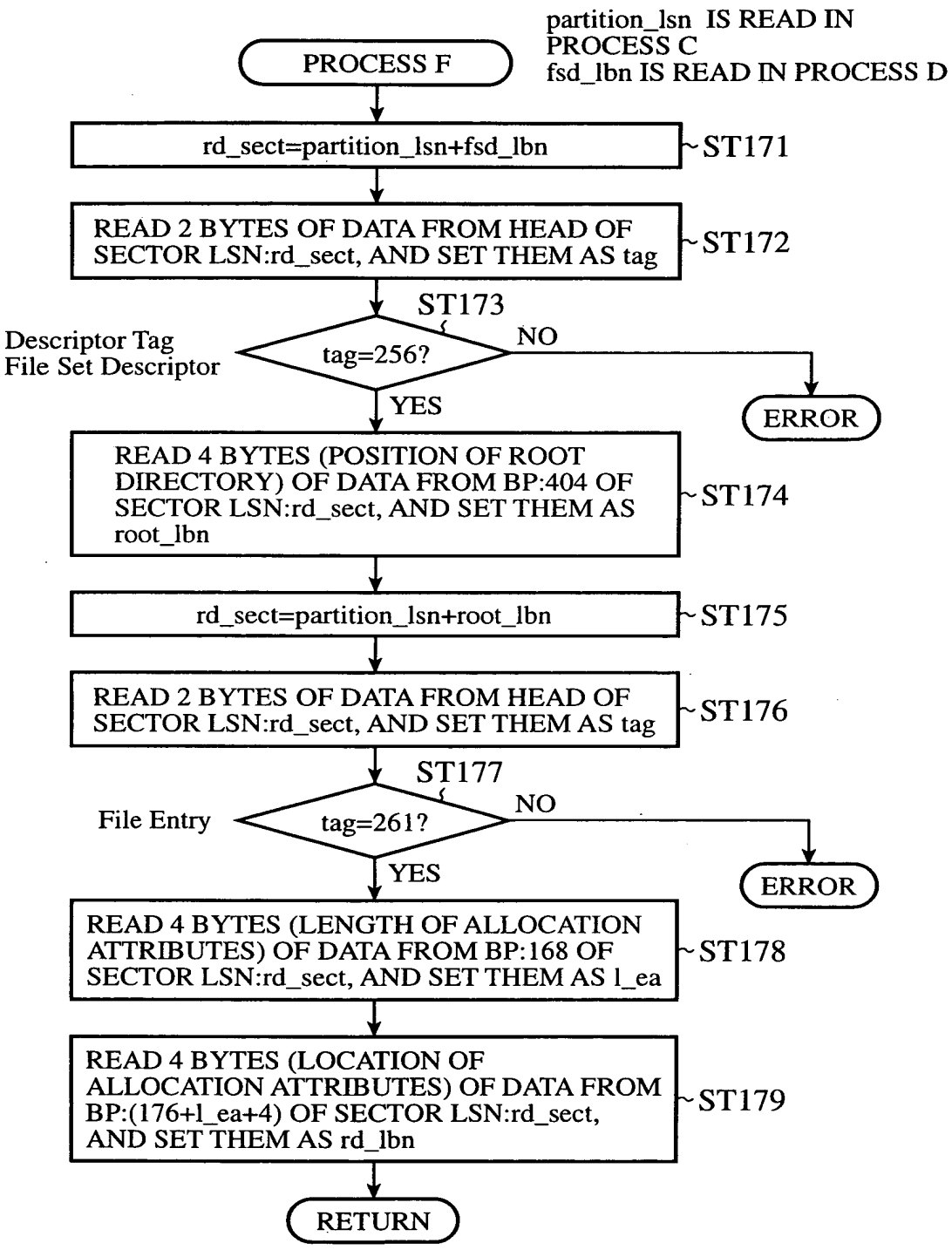

partition_lsn IS READ IN PROCESS C
fsd_lbn IS READ IN PROCESS D
PROCESS F
rd_sect=partition_lsn+fsd_lbn
ST171
READ 2 BYTES OF DATA FROM HEAD OF SECTOR LSN:rd_sect, AND SET THEM AS tag
ST172
ST173
Descriptor Tag
File Set Descriptor
tag=256?
NO
YES
ERROR
READ 4 BYTES (POSITION OF ROOT DIRECTORY) OF DATA FROM BP:404 OF SECTOR LSN:rd_sect, AND SET THEM AS root_lbn
ST174
rd_sect=partition_lsn+root_lbn
ST175
READ 2 BYTES OF DATA FROM HEAD OF SECTOR LSN:rd_sect, AND SET THEM AS tag
ST176
ST177
File Entry
tag=261?
NO
YES
ERROR
READ 4 BYTES (LENGTH OF ALLOCATION ATTRIBUTES) OF DATA FROM BP:168 OF SECTOR LSN:rd_sect, AND SET THEM AS l_ea
ST178
READ 4 BYTES (LOCATION OF ALLOCATION ATTRIBUTES) OF DATA FROM BP:(176+l_ea+4) OF SECTOR LSN:rd_sect, AND SET THEM AS rd_lbn
ST179
RETURN

FIG.12

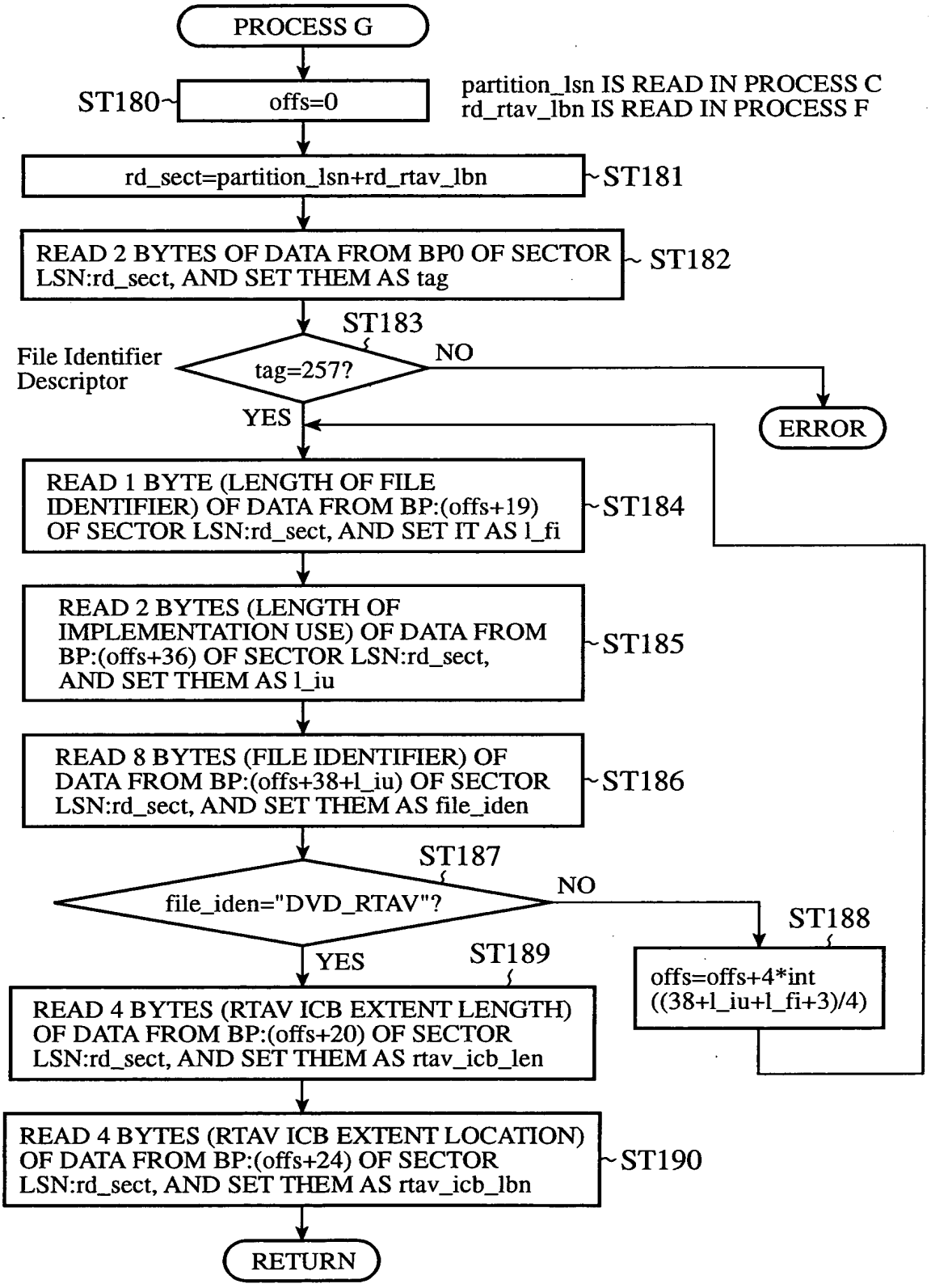

PROCESS G
ST180
offs=0
partition_lsn IS READ IN PROCESS C
rd_rtav_lbn IS READ IN PROCESS F
rd_sect=partition_lsn+rd_rtav_lbn
ST181
READ 2 BYTES OF DATA FROM BP0 OF SECTOR LSN:rd_sect, AND SET THEM AS tag
ST182
ST183
File Identifier Descriptor
tag=257?
NO
ERROR
YES
READ 1 BYTE (LENGTH OF FILE IDENTIFIER) OF DATA FROM BP:(offs+19) OF SECTOR LSN:rd_sect, AND SET IT AS l_fi
ST184
READ 2 BYTES (LENGTH OF IMPLEMENTATION USE) OF DATA FROM BP:(offs+36) OF SECTOR LSN:rd_sect, AND SET THEM AS l_iu
ST185
READ 8 BYTES (FILE IDENTIFIER) OF DATA FROM BP:(offs+38+l_iu) OF SECTOR LSN:rd_sect, AND SET THEM AS file_iden
ST186
ST187
file_iden="DVD_RTAV"?
NO
ST188
offs=offs+4*int ((38+l_iu+l_fi+3)/4)
YES
ST189
READ 4 BYTES (RTAV ICB EXTENT LENGTH) OF DATA FROM BP:(offs+20) OF SECTOR LSN:rd_sect, AND SET THEM AS rtav_icb_len
READ 4 BYTES (RTAV ICB EXTENT LOCATION) OF DATA FROM BP:(offs+24) OF SECTOR LSN:rd_sect, AND SET THEM AS rtav_icb_lbn
ST190
RETURN

FIG.13

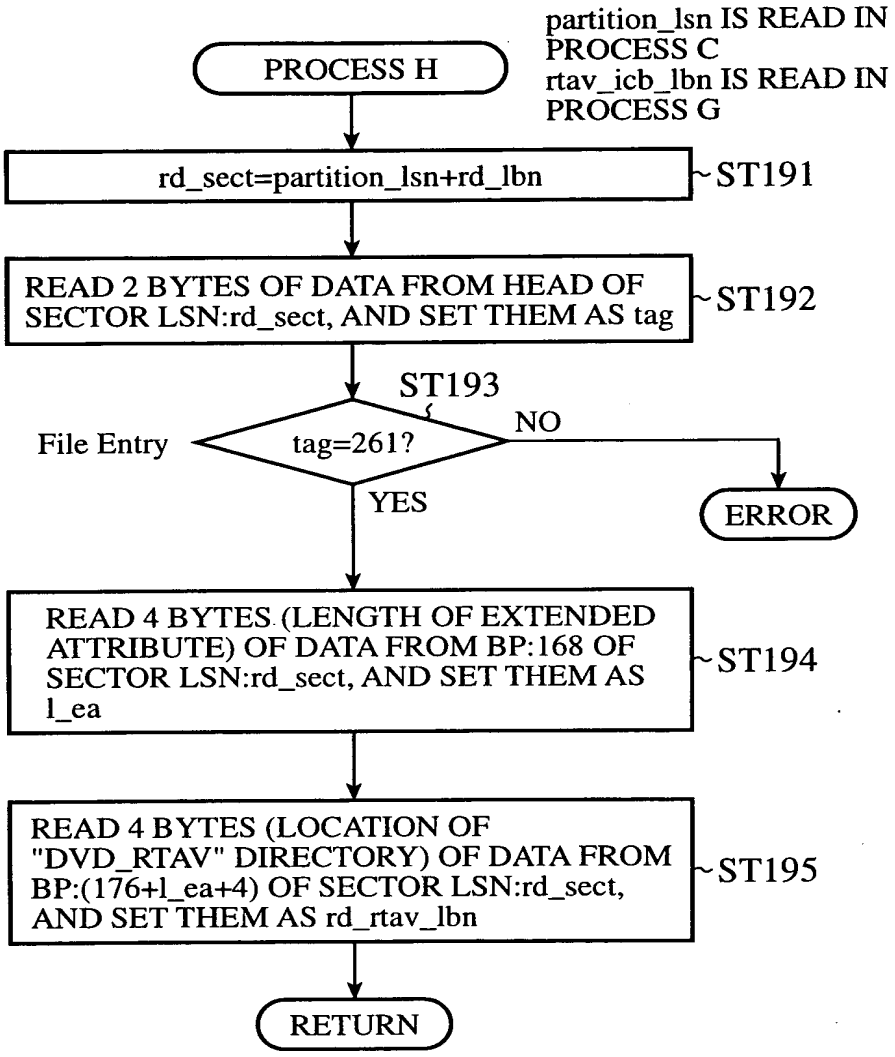

partition_lsn IS READ IN PROCESS C
rtav_icb_lbn IS READ IN PROCESS G
PROCESS H
rd_sect=partition_lsn+rd_lbn
ST191
READ 2 BYTES OF DATA FROM HEAD OF SECTOR LSN:rd_sect, AND SET THEM AS tag
ST192
ST193
File Entry
tag=261?
NO
YES
ERROR
READ 4 BYTES (LENGTH OF EXTENDED ATTRIBUTE) OF DATA FROM BP:168 OF SECTOR LSN:rd_sect, AND SET THEM AS l_ea
ST194
READ 4 BYTES (LOCATION OF "DVD_RTAV" DIRECTORY) OF DATA FROM BP:(176+l_ea+4) OF SECTOR LSN:rd_sect, AND SET THEM AS rd_rtav_lbn
ST195
RETURN

FIG.14

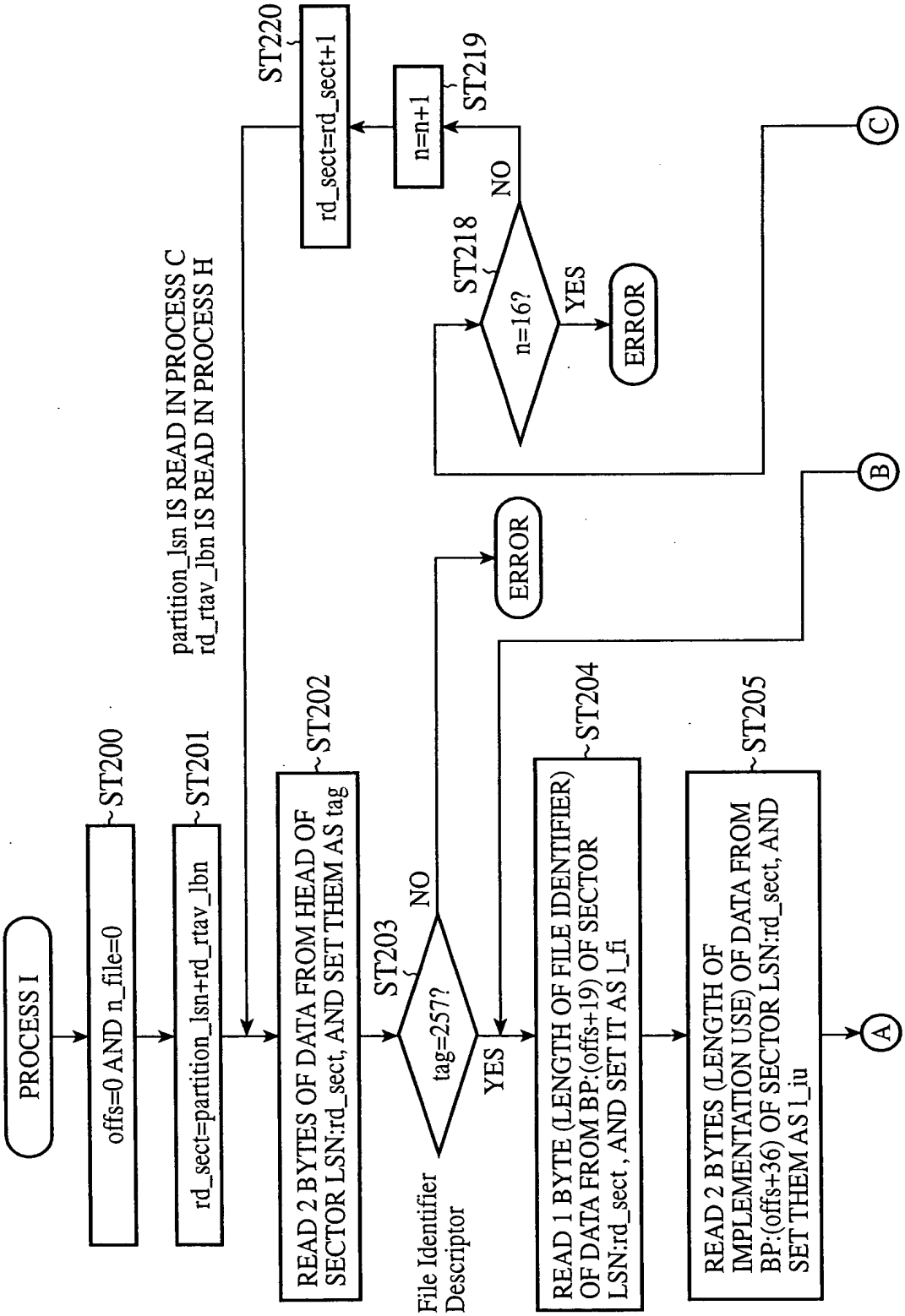

PROCESS I
offs=0 AND n_file=0
ST200
rd_sect=partition_lsn+rd_rtav_lbn
ST201
partition_lsn IS READ IN PROCESS C
rd_rtav_lbn IS READ IN PROCESS H
READ 2 BYTES OF DATA FROM HEAD OF SECTOR LSN:rd_sect, AND SET THEM AS tag
ST202
ST203
tag=257?
NO
YES
File Identifier Descriptor
ERROR
READ 1 BYTE (LENGTH OF FILE IDENTIFIER) OF DATA FROM BP:(offs+19) OF SECTOR LSN:rd_sect , AND SET IT AS l_fi
ST204
READ 2 BYTES (LENGTH OF IMPLEMENTATION USE) OF DATA FROM BP:(offs+36) OF SECTOR LSN:rd_sect, AND SET THEM AS l_iu
ST205
A
B
C
n=16?
ST218
NO
YES
ERROR
n=n+1
ST219
rd_sect=rd_sect+1
ST220

FIG.15

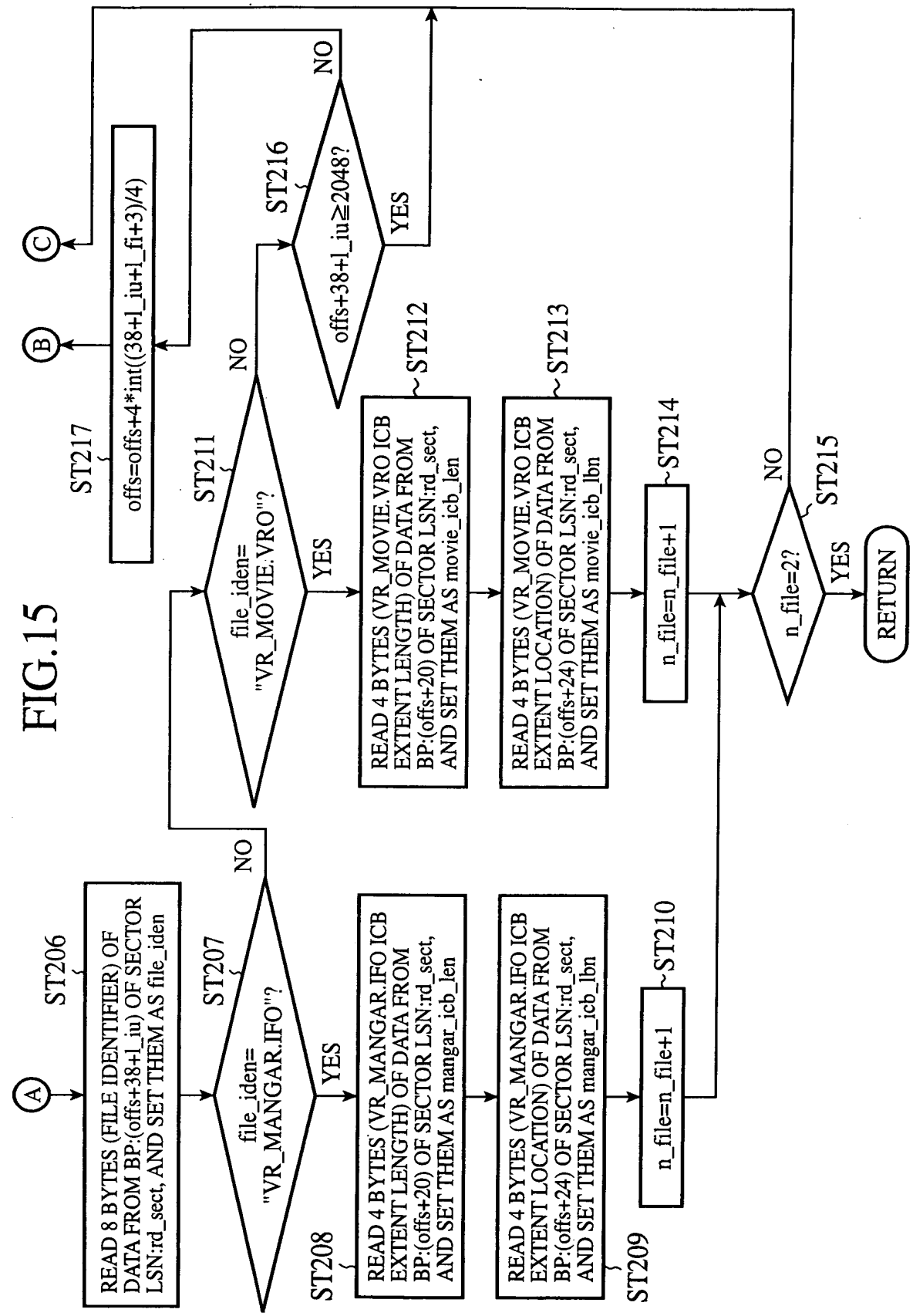

A
ST206
READ 8 BYTES (FILE IDENTIFIER) OF DATA FROM BP:(offs+38+l_iu) OF SECTOR LSN:rd_sect, AND SET THEM AS file_iden
ST207
file_iden= "VR_MANGAR.IFO"?
NO
YES
ST208
READ 4 BYTES (VR_MANGAR.IFO ICB EXTENT LENGTH) OF DATA FROM BP:(offs+20) OF SECTOR LSN:rd_sect, AND SET THEM AS mangar_icb_len
READ 4 BYTES (VR_MANGAR.IFO ICB EXTENT LOCATION) OF DATA FROM BP:(offs+24) OF SECTOR LSN:rd_sect, AND SET THEM AS mangar_icb_lbn
ST209
n_file=n_file+1
ST210
ST211
file_iden= "VR_MOVIE.VRO"?
NO
YES
ST212
READ 4 BYTES (VR_MOVIE.VRO ICB EXTENT LENGTH) OF DATA FROM BP:(offs+20) OF SECTOR LSN:rd_sect, AND SET THEM AS movie_icb_len
ST213
READ 4 BYTES (VR_MOVIE.VRO ICB EXTENT LOCATION) OF DATA FROM BP:(offs+24) OF SECTOR LSN:rd_sect, AND SET THEM AS movie_icb_lbn
n_file=n_file+1
ST214
n_file=2?
NO
YES
ST215
RETURN
B
C
ST216
offs+38+l_iu≧2048?
NO
YES
ST217
offs=offs+4*int((38+l_iu+l_fi+3)/4)

FIG.16

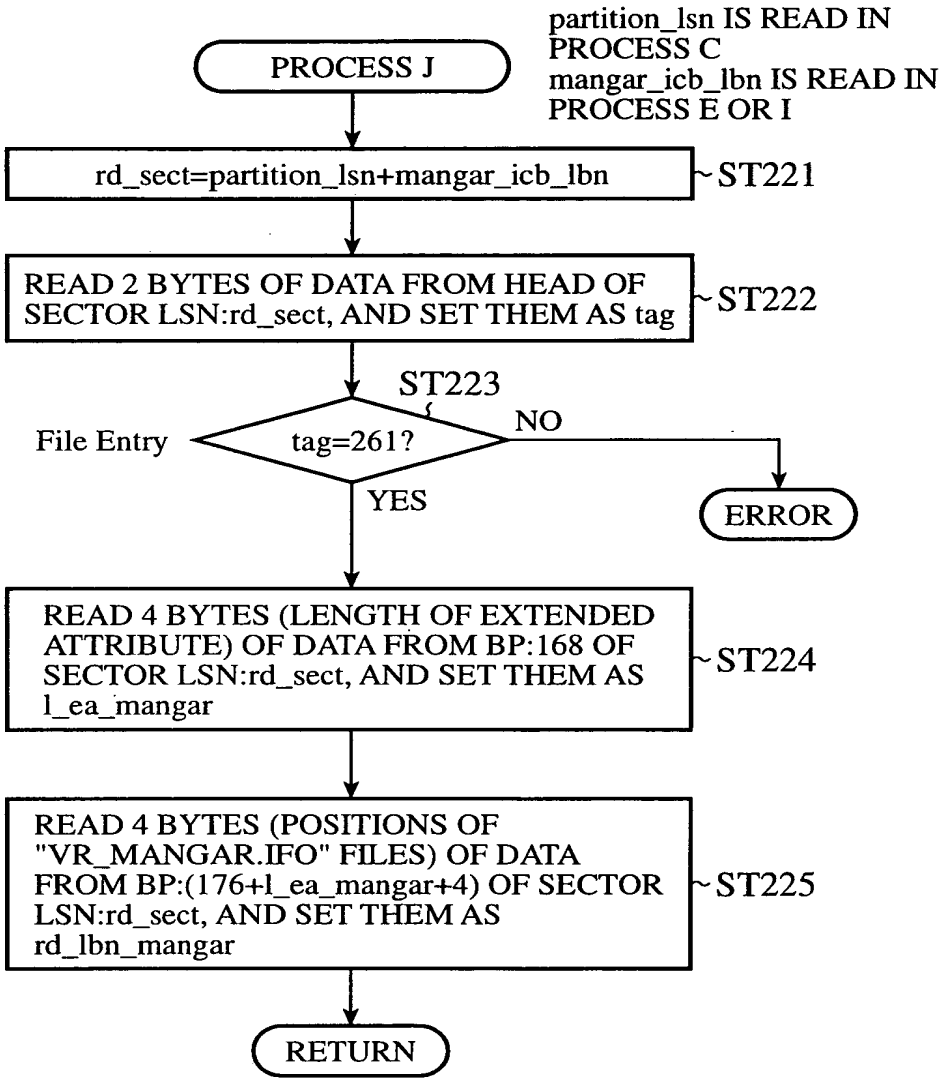

partition_lsn IS READ IN PROCESS C
mangar_icb_lbn IS READ IN PROCESS E OR I
PROCESS J
rd_sect=partition_lsn+mangar_icb_lbn
ST221
READ 2 BYTES OF DATA FROM HEAD OF SECTOR LSN:rd_sect, AND SET THEM AS tag
ST222
ST223
File Entry
tag=261?
NO
YES
ERROR
READ 4 BYTES (LENGTH OF EXTENDED ATTRIBUTE) OF DATA FROM BP:168 OF SECTOR LSN:rd_sect, AND SET THEM AS l_ea_mangar
ST224
READ 4 BYTES (POSITIONS OF "VR_MANGAR.IFO" FILES) OF DATA FROM BP:(176+l_ea_mangar+4) OF SECTOR LSN:rd_sect, AND SET THEM AS rd_lbn_mangar
ST225
RETURN

FIG.17

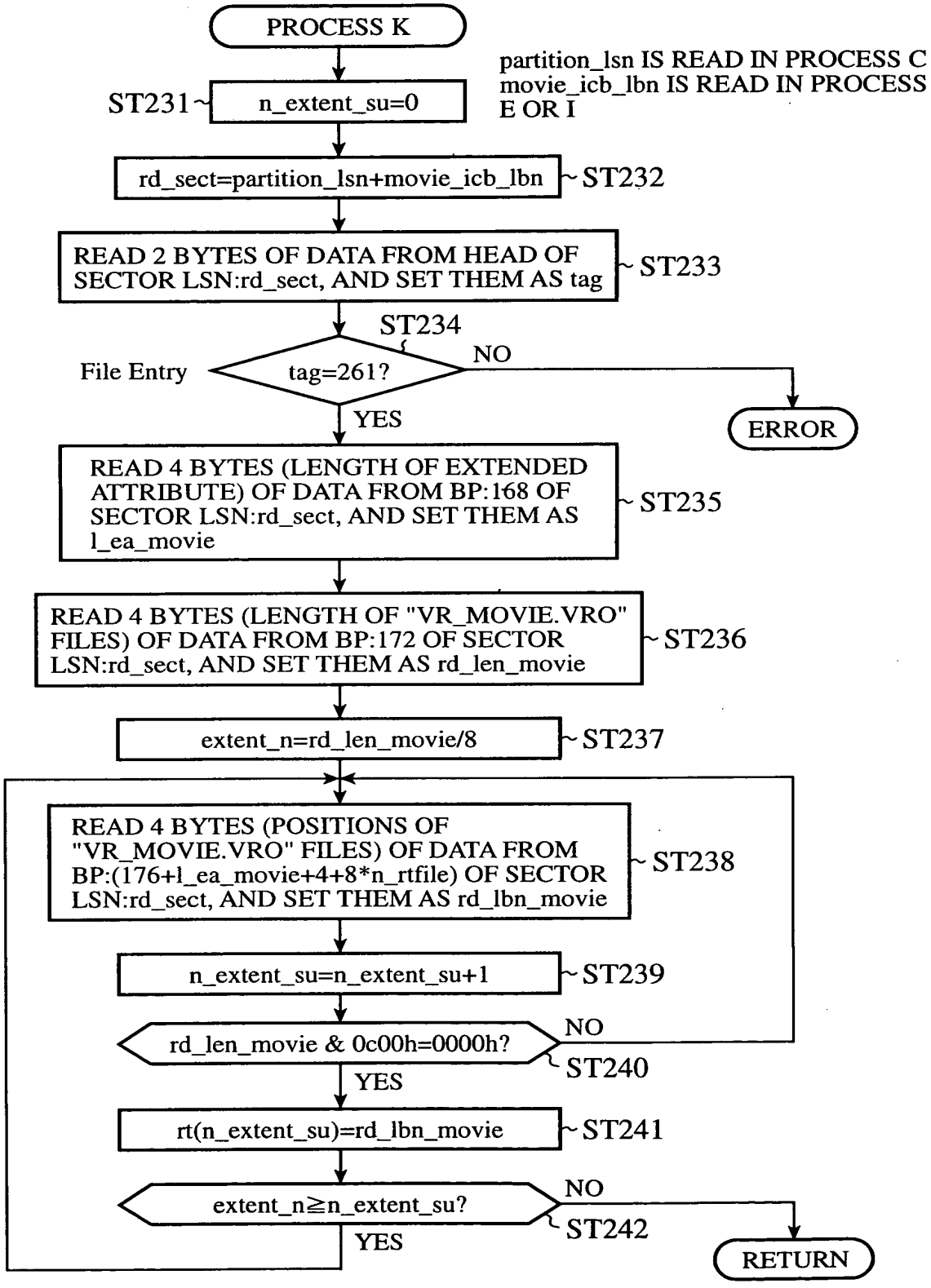

PROCESS K
partition_lsn IS READ IN PROCESS C
movie_icb_lbn IS READ IN PROCESS E OR I
ST231
n_extent_su=0
rd_sect=partition_lsn+movie_icb_lbn
ST232
READ 2 BYTES OF DATA FROM HEAD OF SECTOR LSN:rd_sect, AND SET THEM AS tag
ST233
ST234
File Entry
tag=261?
NO
YES
ERROR
READ 4 BYTES (LENGTH OF EXTENDED ATTRIBUTE) OF DATA FROM BP:168 OF SECTOR LSN:rd_sect, AND SET THEM AS l_ea_movie
ST235
READ 4 BYTES (LENGTH OF "VR_MOVIE.VRO" FILES) OF DATA FROM BP:172 OF SECTOR LSN:rd_sect, AND SET THEM AS rd_len_movie
ST236
extent_n=rd_len_movie/8
ST237
READ 4 BYTES (POSITIONS OF "VR_MOVIE.VRO" FILES) OF DATA FROM BP:(176+l_ea_movie+4+8*n_rtfile) OF SECTOR LSN:rd_sect, AND SET THEM AS rd_lbn_movie
ST238
n_extent_su=n_extent_su+1
ST239
rd_len_movie & 0c00h=0000h?
NO
ST240
YES
rt(n_extent_su)=rd_lbn_movie
ST241
extent_n≧n_extent_su?
NO
ST242
YES
RETURN

FIG.18

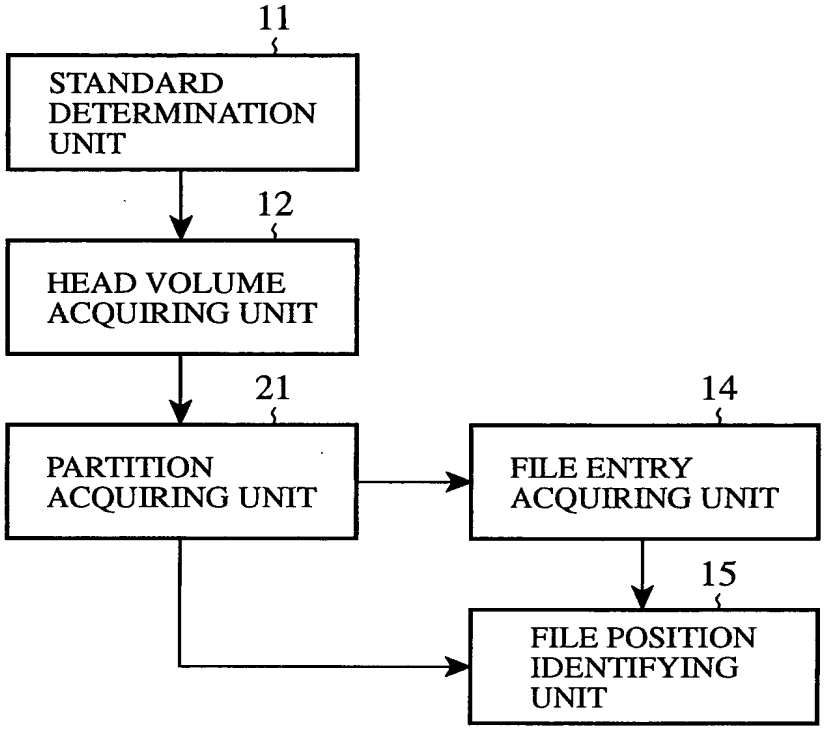

11
STANDARD DETERMINATION UNIT
12
HEAD VOLUME ACQUIRING UNIT
21
PARTITION ACQUIRING UNIT
14
FILE ENTRY ACQUIRING UNIT
15
FILE POSITION IDENTIFYING UNIT

FIG.21

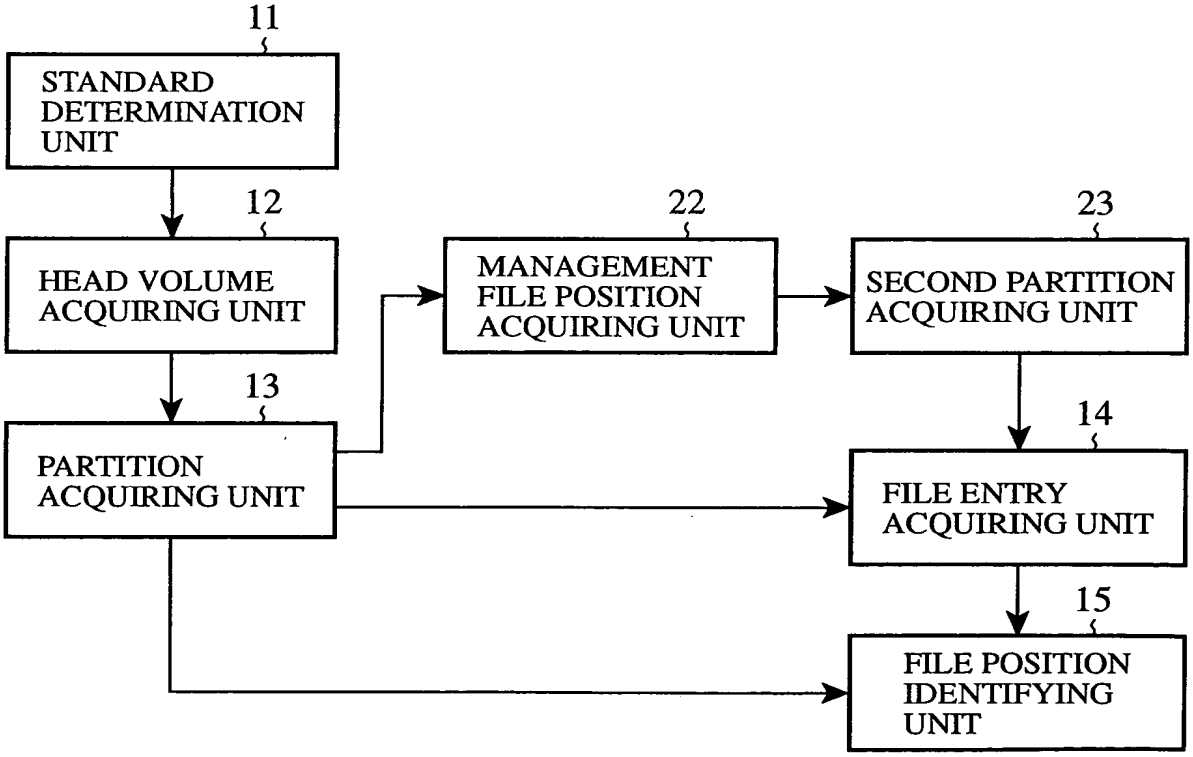

11
STANDARD DETERMINATION UNIT
12
HEAD VOLUME ACQUIRING UNIT
13
PARTITION ACQUIRING UNIT
22
MANAGEMENT FILE POSITION ACQUIRING UNIT
23
SECOND PARTITION ACQUIRING UNIT
14
FILE ENTRY ACQUIRING UNIT
15
FILE POSITION IDENTIFYING UNIT

FIG.19

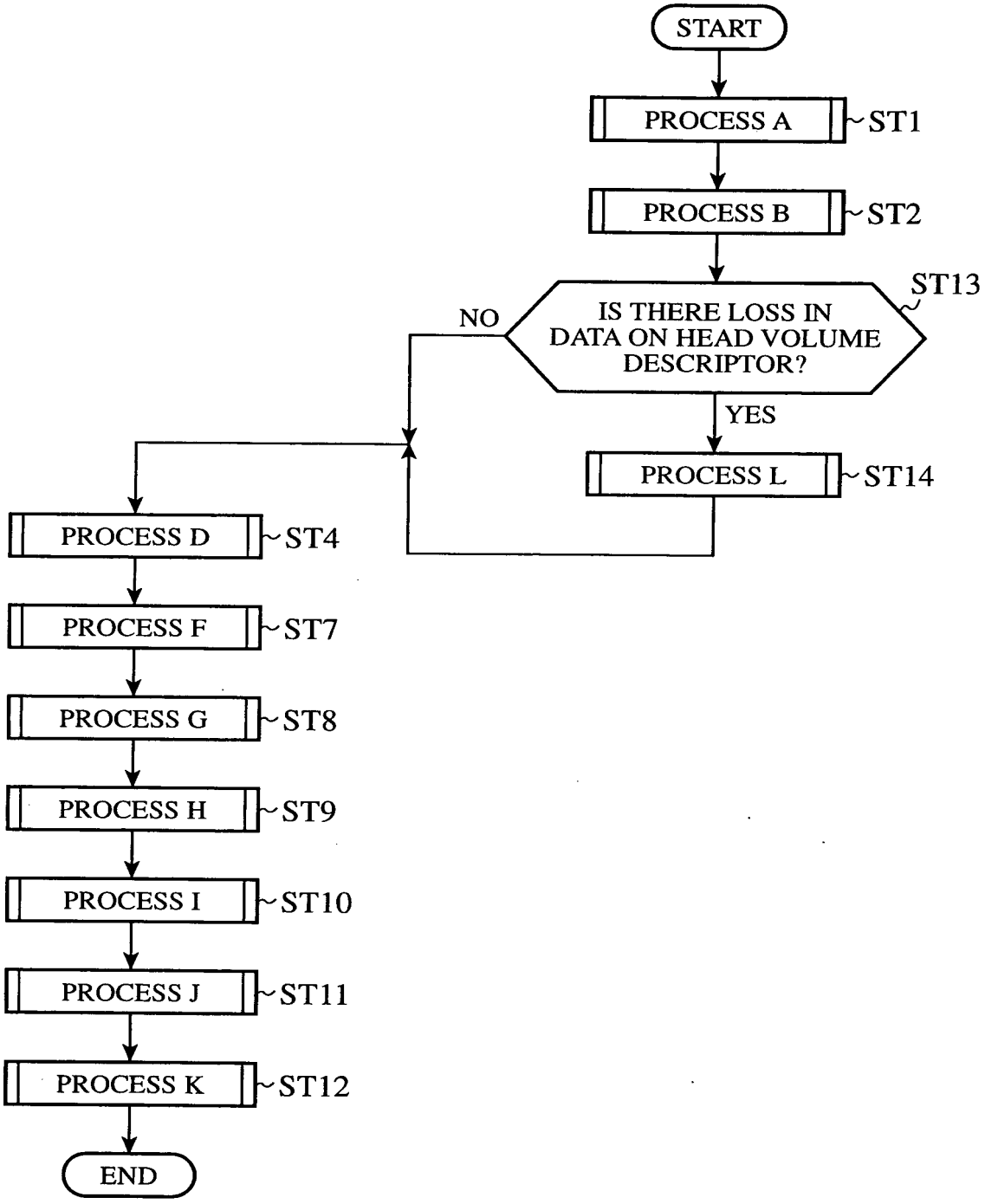

START
PROCESS A
ST1
PROCESS B
ST2
ST13
NO
IS THERE LOSS IN DATA ON HEAD VOLUME DESCRIPTOR?
YES
PROCESS L
ST14
PROCESS D
ST4
PROCESS F
ST7
PROCESS G
ST8
PROCESS H
ST9
PROCESS I
ST10
PROCESS J
ST11
PROCESS K
ST12
END

FIG.20

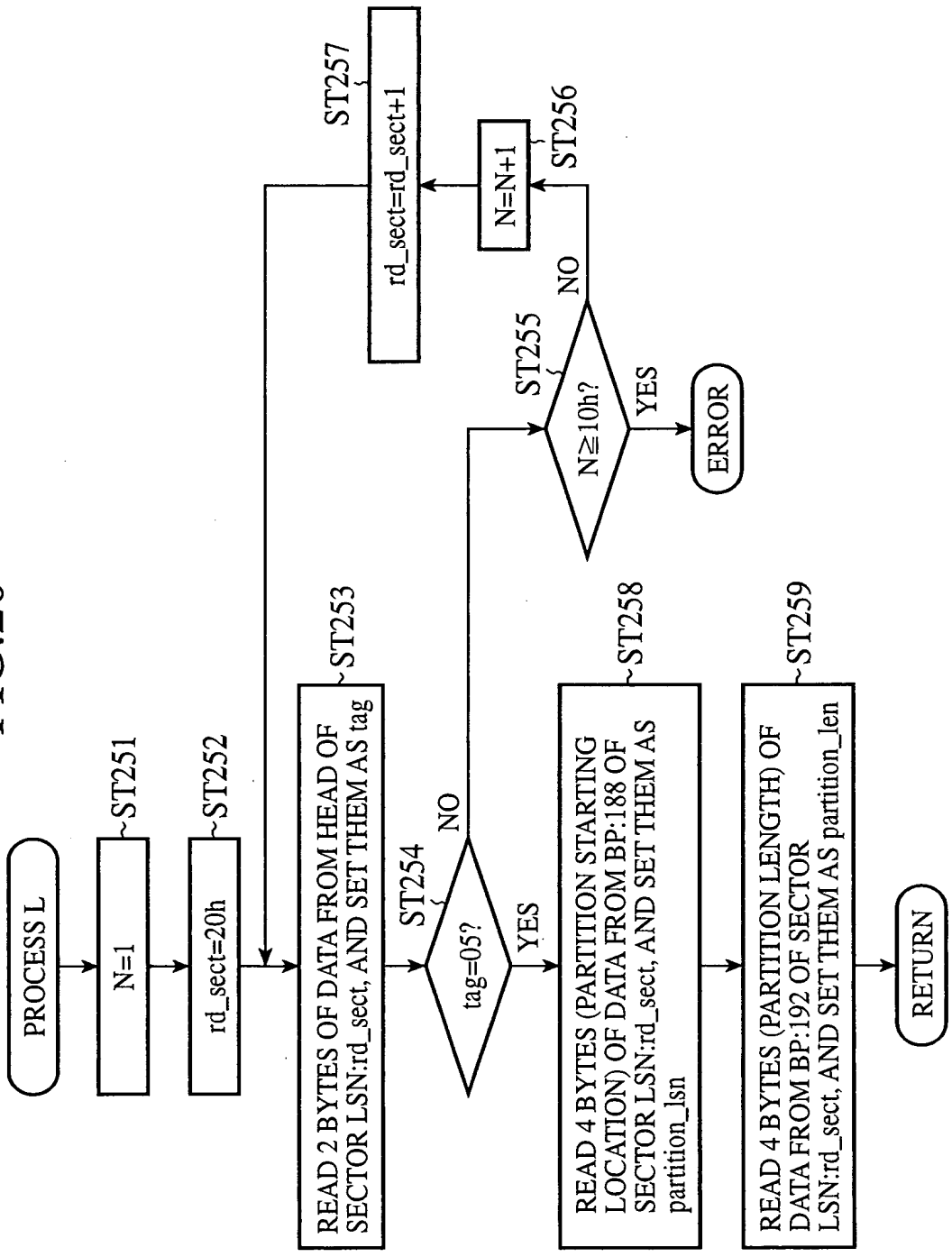

PROCESS L
N=1
ST251
rd_sect=20h
ST252
READ 2 BYTES OF DATA FROM HEAD OF SECTOR LSN:rd_sect, AND SET THEM AS tag
ST253
tag=05?
ST254
NO
YES
N≧10h?
ST255
NO
YES
ERROR
N=N+1
ST256
rd_sect=rd_sect+1
ST257
READ 4 BYTES (PARTITION STARTING LOCATION) OF DATA FROM BP:188 OF SECTOR LSN:rd_sect, AND SET THEM AS partition_lsn
ST258
READ 4 BYTES (PARTITION LENGTH) OF DATA FROM BP:192 OF SECTOR LSN:rd_sect, AND SET THEM AS partition_len
ST259
RETURN

FIG.22

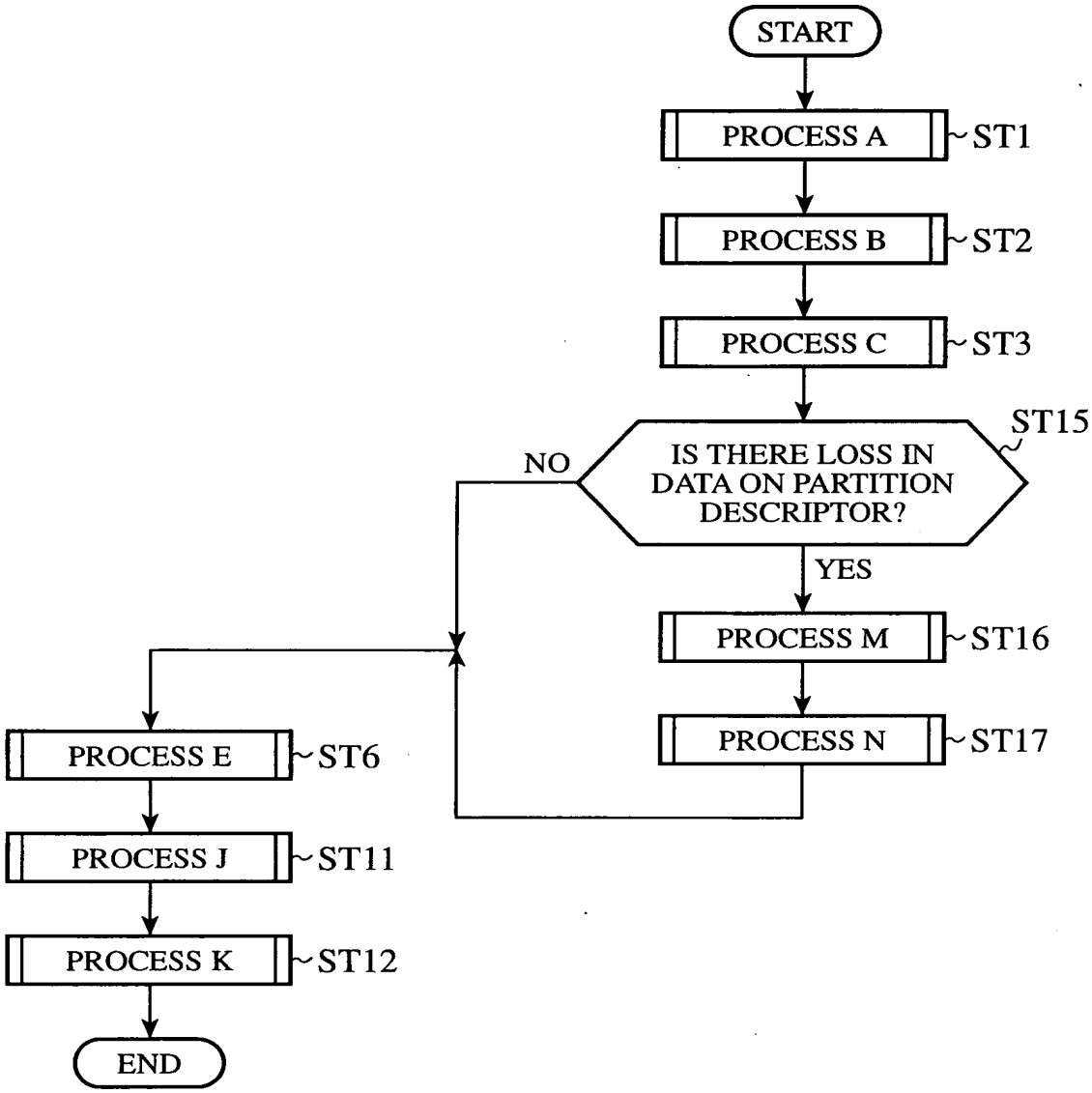

START
PROCESS A
ST1
PROCESS B
ST2
PROCESS C
ST3
ST15
IS THERE LOSS IN DATA ON PARTITION DESCRIPTOR?
NO
YES
PROCESS M
ST16
PROCESS N
ST17
PROCESS E
ST6
PROCESS J
ST11
PROCESS K
ST12
END

FIG.23

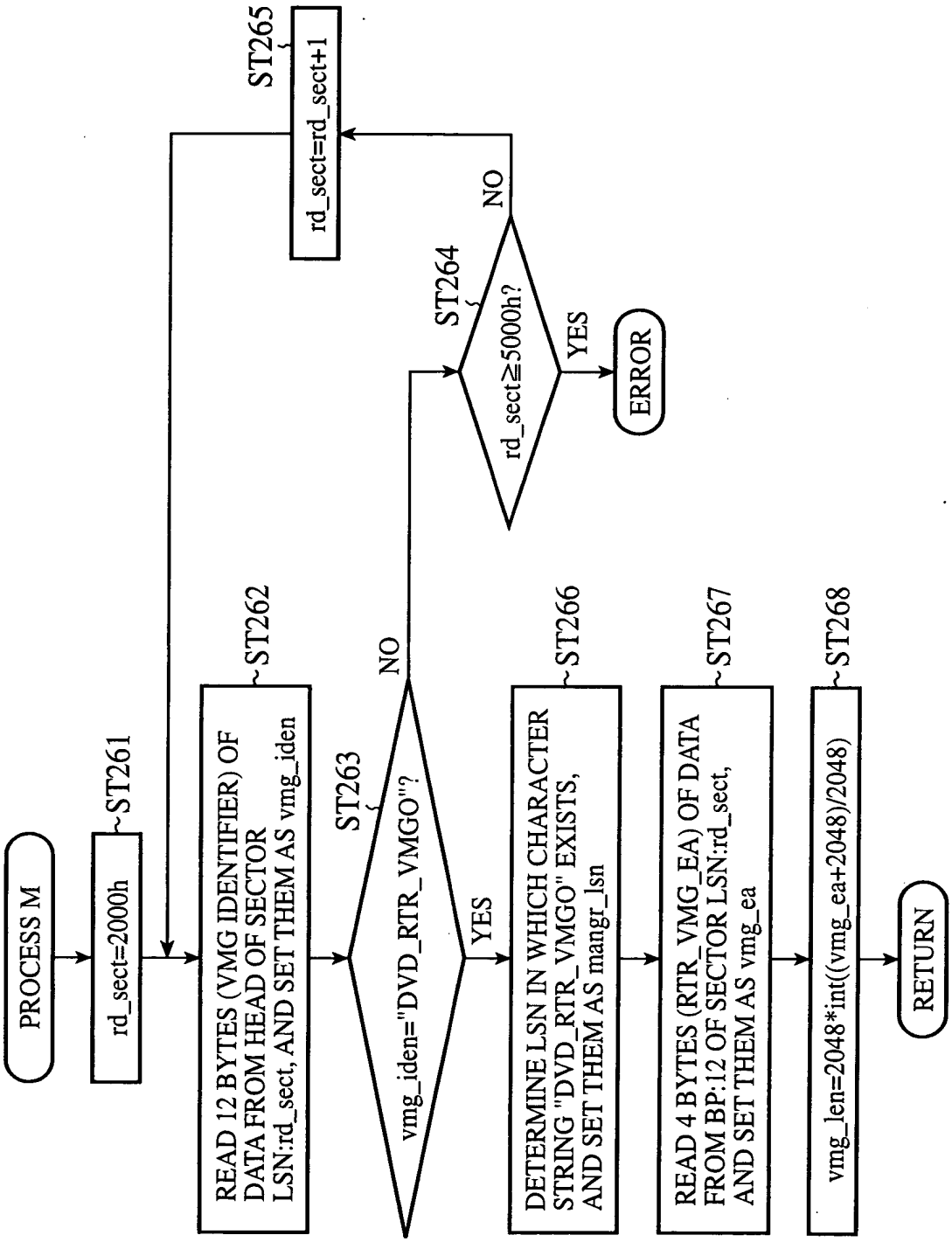
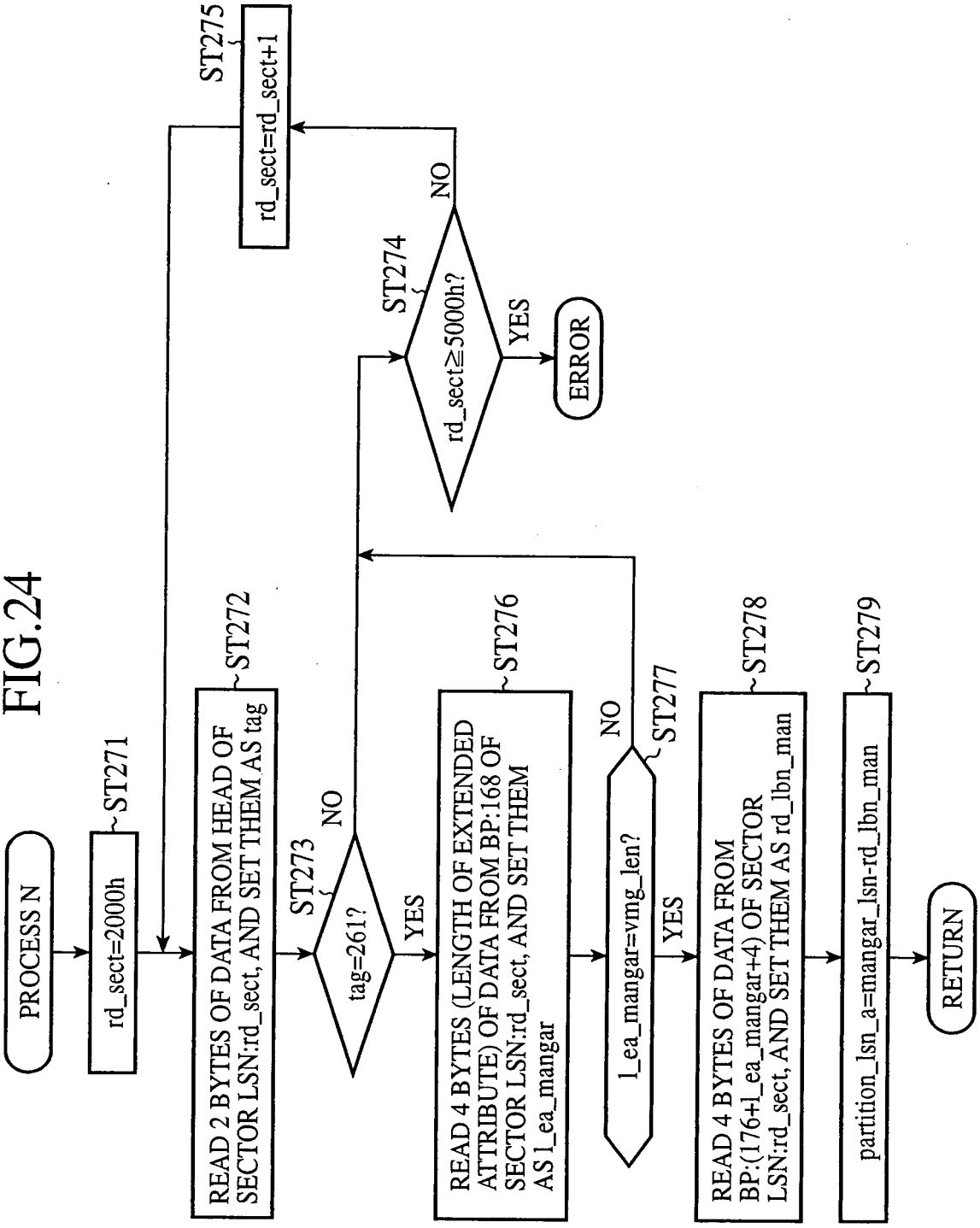

PROCESS M
ST261
rd_sect=2000h
ST262
READ 12 BYTES (VMG IDENTIFIER) OF DATA FROM HEAD OF SECTOR LSN:rd_sect, AND SET THEM AS vmg_iden
ST263
vmg_iden="DVD_RTR_VMGO"?
NO
YES
ST264
rd_sect≧5000h?
NO
YES
ERROR
ST265
rd_sect=rd_sect+1
ST266
DETERMINE LSN IN WHICH CHARACTER STRING "DVD_RTR_VMGO" EXISTS, AND SET THEM AS mangr_lsn
ST267
READ 4 BYTES (RTR_VMG_EA) OF DATA FROM BP:12 OF SECTOR LSN:rd_sect, AND SET THEM AS vmg_ea
ST268
vmg_len=2048*int((vmg_ea+2048)/2048)
RETURN

FIG.24


PROCESS N
ST271
rd_sect=2000h
ST272
READ 2 BYTES OF DATA FROM HEAD OF SECTOR LSN:rd_sect, AND SET THEM AS tag
ST273
tag=261?
NO
YES
ST274
rd_sect≧5000h?
NO
YES
ERROR
ST275
rd_sect=rd_sect+1
ST276
READ 4 BYTES (LENGTH OF EXTENDED ATTRIBUTE) OF DATA FROM BP:168 OF SECTOR LSN:rd_sect, AND SET THEM AS l_ea_mangar
ST277
l_ea_mangar=vmg_len?
NO
YES
ST278
READ 4 BYTES OF DATA FROM BP:(176+l_ea_mangar+4) OF SECTOR LSN:rd_sect, AND SET THEM AS rd_lbn_man
ST279
partition_lsn_a=mangar_lsn-rd_lbn_man
RETURN